

# SMD Multilayer Chip Varistor

AMCV-2220H

RoHS  
Compliant



5.7 x 5.0 x 2.5mm

## FEATURES:

- SMD type, small size suitable for high density mounting
- Excellent clamping ratio and strong capability of voltage surge suppression
- Excellent solderability (Ni, Sn plating)

## APPLICATIONS:

- Transient voltage protection and voltage surge suppression for LED lighting
- Suitable for LCD-TV, STB, Switch, Router, PLC, Security System, smart meters, mobile phones
- Suppressing Induced / switching over-voltage caused by lightning and power
- Protecting DC-DC Module, I/O ports, IC driver

## STANDARD SPECIFICATIONS:

**Operating Temperature:** -55°C ~ +85°C

**Storage Temperature:** -10°C ~ +40°C and RH 70% (Max.)

| Part Number    | Max. Working Voltage |                  | Varistor Voltage    | Max. Clamping Voltage |                | Rated Single Pulse Transient |                        | Typical Capacitance          |
|----------------|----------------------|------------------|---------------------|-----------------------|----------------|------------------------------|------------------------|------------------------------|
| Test Condition | <20μA                |                  | @1mA DC             | 8/20μs                | ESD            | Energy<br>10/1000μs          | Peak Current<br>8/20μs | @1V <sub>rms</sub> ,<br>1kHz |
|                | DC                   | AC RMS           |                     |                       |                |                              |                        |                              |
| Units          | Volts                | Volts            | Volts               | Volts                 | Amps           | Joules                       | Amps                   | pF                           |
| Symbol         | V <sub>WDC</sub>     | V <sub>WAC</sub> | V <sub>B</sub>      | V <sub>C</sub>        | I <sub>C</sub> | E <sub>T</sub>               | I <sub>P</sub>         | C <sub>P</sub>               |
| AMCV-2220H-5R5 | 5.5                  | 4                | 12.0 [10.0-14.0]    | 18                    | 10.0           | 2.3                          | 1200                   | 8000                         |
| AMCV-2220H-090 | 9                    | 6.4              | 14.0 [12.0-16.0]    | 20                    | 10.0           | 2.7                          | 1200                   | 7000                         |
| AMCV-2220H-120 | 12                   | 8.5              | 16.0 [13.0-19.0]    | 25                    | 10.0           | 3.2                          | 1200                   | 6400                         |
| AMCV-2220H-140 | 14                   | 10.0             | 19.0 [16.0-22.0]    | 30                    | 10.0           | 5.4                          | 1200                   | 6000                         |
| AMCV-2220H-180 | 18                   | 12.7             | 25.0 [22.0-28.0]    | 40                    | 10.0           | 5.8                          | 1200                   | 5000                         |
| AMCV-2220H-220 | 22                   | 15.6             | 30.0 [26.0-34.0]    | 45                    | 10.0           | 6.5                          | 1200                   | 4500                         |
| AMCV-2220H-260 | 26                   | 18.4             | 35.0 [31.0-38.0]    | 58                    | 10.0           | 7.8                          | 1200                   | 4000                         |
| AMCV-2220H-300 | 30                   | 21.3             | 42.0 [37.0-46.0]    | 65                    | 10.0           | 9.6                          | 1200                   | 3000                         |
| AMCV-2220H-380 | 38                   | 30.0             | 50.0 [46.0-54.0]    | 75                    | 10.0           | 12.0                         | 1200                   | 2200                         |
| AMCV-2220H-480 | 48                   | 34.1             | 60.0 [54.0-67.0]    | 100                   | 10.0           | 10.0                         | 900                    | 1500                         |
| AMCV-2220H-560 | 56                   | 40.0             | 68.0 [61.0-75.0]    | 120                   | 10.0           | 10.0                         | 900                    | 1300                         |
| AMCV-2220H-600 | 60                   | 46.0             | 76.0 [69.0-83.0]    | 130                   | 10.0           | 9.0                          | 900                    | 1100                         |
| AMCV-2220H-650 | 65                   | 50.0             | 82.0 [73.0-91.0]    | 140                   | 10.0           | 9.0                          | 900                    | 900                          |
| AMCV-2220H-750 | 75                   | 55.0             | 94.0 [85.0-103.0]   | 160                   | 10.0           | 8.5                          | 900                    | 800                          |
| AMCV-2220H-850 | 85                   | 60.0             | 100.0 [90.0-110.0]  | 170                   | 10.0           | 8.5                          | 900                    | 700                          |
| AMCV-2220H-101 | 100                  | 75.0             | 120.0 [108.0-132.0] | 200                   | 10.0           | 8.5                          | 900                    | 400                          |

Unless otherwise specified, the standard atmospheric conditions for measurement/test as:

- Ambient Temperature: 20±15°C
- Relative Humidity: 65±20%
- Air Pressure: 86 kPa to 106 kPa

| Items                                        | Test Methods and Remarks                                      |
|----------------------------------------------|---------------------------------------------------------------|
| Varistor Voltage at 1mA DC (V <sub>B</sub> ) | Measuring current: 1mA DC<br>Duration: 0.2 to 2 sec           |
| Capacitance (C)                              | Measure source: 1.0 V <sub>RMS</sub><br>Test frequency: 1kHz. |
| Clamping Voltage (V <sub>C</sub> )           | Measuring source: 8/20us waveform                             |

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5.7 x 5.0 x 2.5mm

## OPTIONS AND PART IDENTIFICATION:

AMCV-2220H- - 

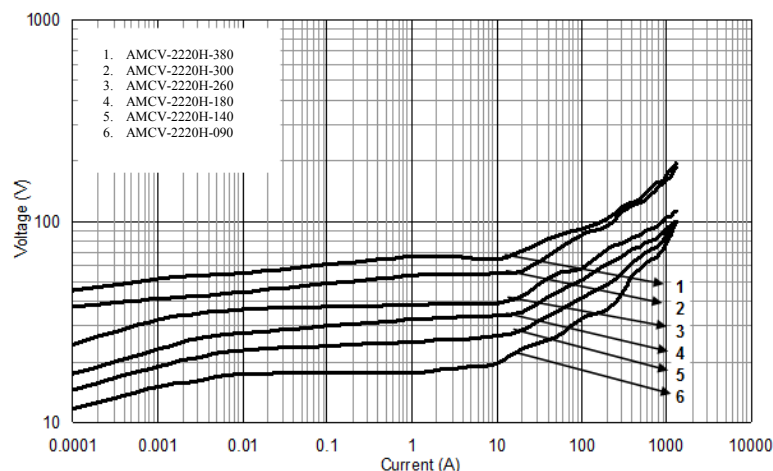
### Voltage Code

Please refer to the table above

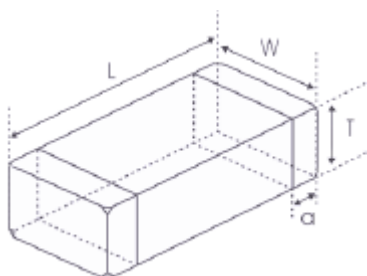
### Packaging

T: Tape and Reel  
(2kpcs / reel)

## V/I CHARACTERISTICS

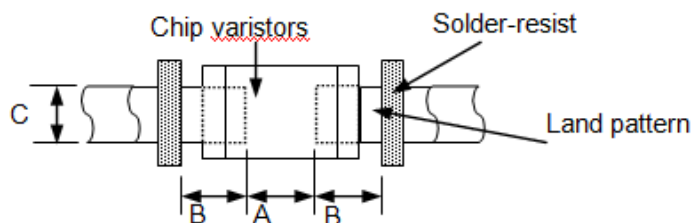


## OUTLINE DIMENSION:



| L       | W       | T       | a        |
|---------|---------|---------|----------|
| 5.7±0.4 | 5.0±0.4 | 2.5Max. | 0.25~1.0 |

### Recommended Land Pattern



| A       | B       | C       |
|---------|---------|---------|
| 4.0~4.2 | 1.8~2.0 | 5.2~5.5 |

Dimension: mm



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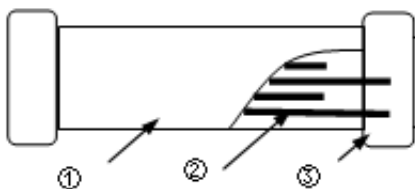
RoHS  
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5.7 x 5.0 x 2.5mm

## Materials

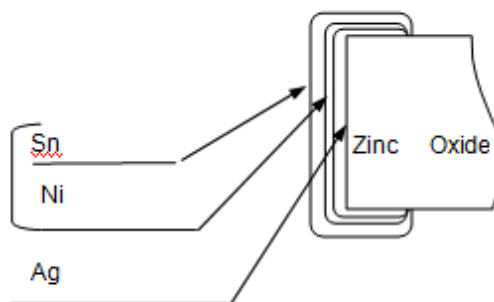
Side View



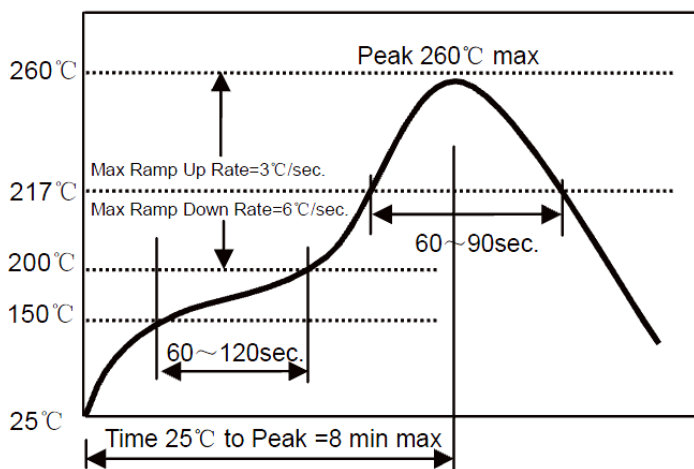
Top View



|   | Part Name          | Material                                |
|---|--------------------|-----------------------------------------|
| 1 | Base Material      | ZnO                                     |
| 2 | Internal Conductor | Ag-Pd                                   |
| 3 | Terminal Electrode | Ag (Inner layer)<br>Ni-Sn (Outer layer) |



## REFLOW PROFILE:



|                             |                               |
|-----------------------------|-------------------------------|
| Preheat Condition           | 150 to 200 °C; 60 to 120 sec. |
| Allowed time above 217 °C   | 60 to 90 sec.                 |
| Max temperature             | 260 °C                        |
| Max time at max temperature | 10 sec.                       |
| Solder paste                | Sn/3.0Ag/0.5Cu                |
| Allowed Reflow time         | 2x max.                       |

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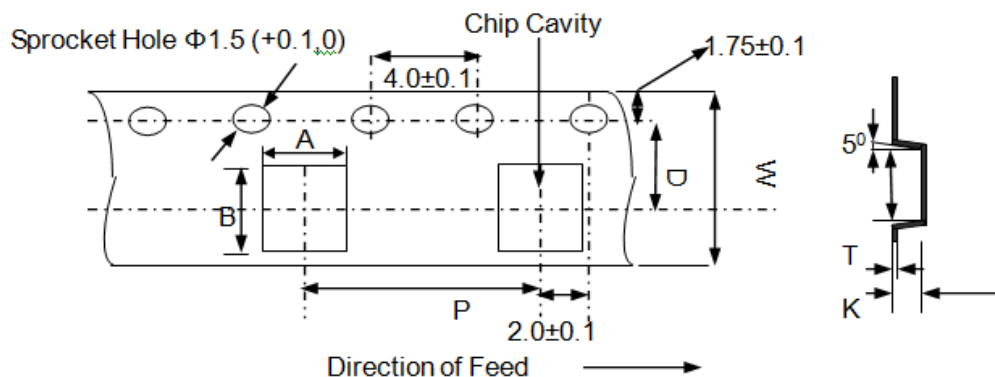
RoHS  
Compliant



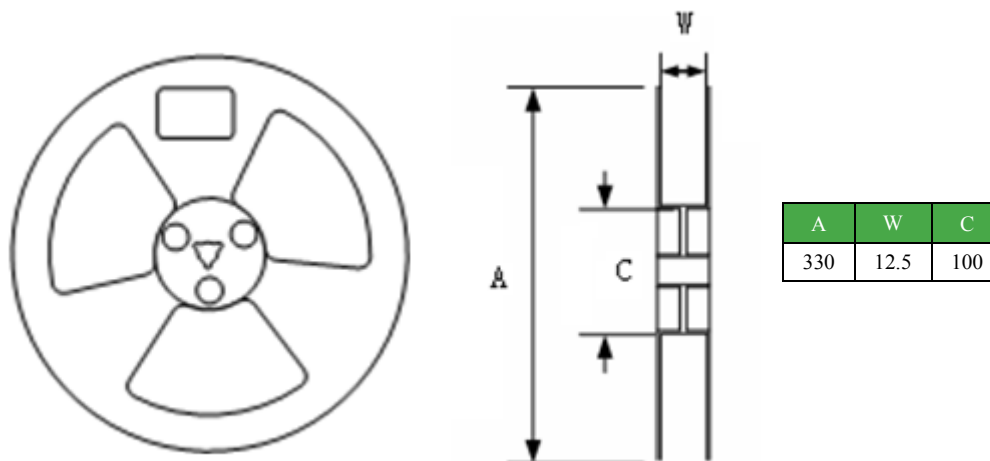
5.7 x 5.0 x 2.5mm

## TAPE & REEL:

T: 2,000pcs / reel



| W    | A    | B    | D    | P   | K max | T max |
|------|------|------|------|-----|-------|-------|
| 12.0 | 5.10 | 6.00 | 5.50 | 8.0 | 2.7   | 0.33  |



## Storage Conditions

- The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to high humidity. Package must be stored at  $40^\circ\text{C}$  or less and 70% RH or less.
- The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to dust or harmful gas (e.g. HCl, sulfurous gas of  $\text{H}_2\text{S}$ ).
- Packaging material may be deformed if package are stored where they are exposed to heat or direct sunlight.
- Solderability shall be guaranteed for 6 months from the date of delivery on condition that they are stored at the environment specified in 1.3. The parts that are stored more than 6 months shall be checked solderability before use.

Dimension: mm

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**Телефон:** +7 812 627 14 35

**Электронная почта:** [sales@st-electron.ru](mailto:sales@st-electron.ru)

**Адрес:** 198099, Санкт-Петербург,  
Промышленная ул, дом № 19, литера Н,  
помещение 100-Н Офис 331